

One-Loop String Amplitudes Revisited

Thursday, January 18, 2024 2:30 PM (1 hour)

We reconsider one-loop amplitudes of gauge bosons and gravitons in both type I and II string theory. They are given by explicit integrals over the moduli space of surfaces and are some of the richest and most interesting quantities of string theory. The integrals are quite hard to evaluate directly, which makes it difficult to extract physics from the integral expressions. We apply a number of techniques such as contour deformations, Rademacher expansion and saddle point approximation to understand the amplitude. We are in particular able to evaluate the type I amplitude numerically and check long-standing conjectures about their behavior at high energies, where they differ drastically from QFT amplitudes. The talk is based on work with S. Mizera, as well as on-going work with S. Mizera and P. Banerjee.

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